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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,940	06/24/2003	Miguel Abdo	061607-1720	1824

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EXAMINER
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PARK, JUNG H

ART UNIT	PAPER NUMBER
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2616

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/10/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/602,940

Applicant(s)

ABDO ET AL.

Examiner

Jung Park

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                 | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Specification Objections***

1. The disclosure is objected to because of the following informalities:

At page 20, ¶.95, what is mean by ICMP code field is set to 810? The Examiner suggests changing "ICMP code field is set to 810" to --ICMP code field 810 is set to 0--.

### ***Claim Objections***

2. Claims 10-13 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.
  - a. In claims 10-13, the Examiner suggests changing "8" into --9--.
  - b. In claim 1, lines 6-7, what is mean by "the node address the forward counter"? Is it the node address and the forward counter?

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. Claims 1-12 and 16-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang (US 7020138, "Huang") in view of Gundavelli (US 6795403, "Gundavelli") and further in view of Dobbins et al. (US 6711171, "Dobbins").

**Regarding claim 1**, Huang discloses a system for automatically discovering nodes on a network comprising:

- an announcer logic (a logic, not shown, in hosts & routers fig.2) configured to transmit a node address (sending IP datagrams to a destination host, see col.4, ln.48-50) and a forward counter (inherent that IP heard includes a TTL, see col.4, ln.48-61) to a destination node (24 fig.2; col.4, ln.48-61) associated with the node in a static type list (static routing table, see Table 1 and static routing operation, see col.2, ln.64-65); and
- a listener logic (a logic, not shown, in hosts & routers fig.2) configured to receive an announcement packet (ICMP message, see col.4, ln.55-61), further configured to add at least one new node (find a series of routers, see col.3, ln.37-39). Huang also discloses that IP packets are transmitted if the forward counter is greater than zero (router abandons when TTL, i.e., forward counter, is zero, see col.4, ln.55-57).

Huang discloses an example of sending IP datagrams to one destination node in the static route list, but does not explicitly disclose the limitation of "to all nodes in the list having a static type". However, Gundavelli explicitly discloses an automatic node discovery method by sending ICMP Echo request to all the IP addresses (col.2, ln.17-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply ICMP Echo request to all IP addresses in the static table of Huang so as to efficiently build communication system by using automatic node discovery method.

Huang discloses a dynamic routing algorithm/protocol to find a suitable routing path (col.2, ln.14-20), but lacks what Dobbins discloses, "a forwarder logic (a logic, not shown, in IP routers fig.21) configured to transmit the node address and the forward counter associated with the new node (advertise by using RIP or OSPF, see col.24,

ln.22-24; IP address and Hop, see routing tables in col.24), to all known nodes in the list (routing tables, see col.24) and the new node has a discovered type (dynamic/routed type, see tables in col.24).” Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the advertisement of routing protocol taught by Dobbins into the dynamic routing method of Huang so as to properly transmit/forward IP packets by synchronizing routing tables of routers in a network.

Regarding claim 2, Huang discloses, “wherein the announcer logic is further configured to transmit the node address and the forward counter using a unicast address (send IP datagrams to a destination host address, see col.4, ln.48-50).”

Regarding claim 3, Huang discloses, “wherein the forward counter is decremented upon receipt (subtract, see col.4, ln.51-55).”

Regarding claim 4, Huang discloses, “wherein the forward counter is decremented before transmission (col.4, ln.51-55).”

Regarding claim 5, Huang discloses, “further comprising a network interface configured to transmit and receive data on the network (inherent to have an interface for transmitting and receiving functions, see col.4, ln.48-col.5, ln.17).”

Regarding claim 6, Huang discloses, “wherein the announcer logic is further configured to transmit the node address and the forward counter via the network interface (network interface, see fig.2).”

Regarding claim 7, Huang discloses, "wherein the node address is an IP address (IP datagrams, see col.4, ln.48)."

Regarding claim 8, Huang discloses an ICMP message, but lacks what Gundavelli discloses, "the announcement packet is an ICMP packet with type Echo Request (ICMP Echo request, see col.2, ln.17-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to utilize ICMP Echo Request taught by Gundavelli into the ICMP message of Huang in order to carry out automatic discovery by sending ICMP Echo request. That is, to get ICMP Echo Reply message to have response from destination nodes without using an extra message since the Echo Reply is an ICMP message generated in response to an ICMP Echo Request message, and is mandatory for all hosts and routers.

**Regarding claim 9**, it is a claim corresponding to claim 1, except the limitations of "initializing a first known node list". However, Huang also discloses the limitations, "initializing a first known node list (pre-built static table, see col.1, table 1 and col.2, ln.65-67) and is therefore rejected for the similar reasons set forth in the rejection of claim 1.

Regarding claims 10 and 12, they are claims corresponding to claims 2 & 4, respectively and are therefore rejected for the similar reasons set forth in the rejection of claims 2 and 4.

Regarding claim 11, Huang does not explicitly disclose, "wherein transmitting onto the network to all known nodes and all discovered nodes further comprises transmitting the node address and the forward counter using a unicast address." However, Gundavelli discloses an automatic discovery method by sending ICMP Echo requests to all IP addresses, i.e., a unicast address). Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the automatic discovery method taught by Gundavelli into the dynamic routing method disclosed by Huang so that the ICMP Echo message is forwarded to all IP nodes when an intermediate node receives the ICMP message from other nodes. One would be motivated to forward the ICMP message to all IP nodes so as to prevent any new nodes being missing from discovering procedure.

**Regarding claim 16**, it is a claim corresponding to combination of claims 1, 4, & 5, except of the limitations of "a list of discovered nodes, where each discovered node comprises a node address and a forward counter". Huang further discloses the limitations, "a list of discovered nodes, where each discovered node comprises a node address and a forward counter (IP address is obtained and IP datagram has a TTL, see col.4, ln.67-col.5, ln.4). Therefore, this claim is rejected for the similar reasons set forth in the rejection of claim 1.

Regarding claims 17-21, 25, & 26, they are claims corresponding to claims 2, 11, 3-5, 7, & 8, respectively and are therefore rejected for the similar reasons set forth in the rejection of the claims.

Regarding claim 22-24, they are claims corresponding to network interface for the different logics recited in claim 6 and is therefore rejected for the similar reasons set forth in the rejection of claim 6.

5. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang and Gundavelli in view of Dobbins and further in view of Quarterman et al. (US 20020177910, "Quarterman").

Regarding claim 13, Huang does not explicitly disclose, "detecting an unreachable node; deleting from the list, responsive to the detecting, each node with a discovery source matching the unreachable node; and announcing, to each node in the list, the deletion of each deleted node." However, Quarterman discloses the limitations of "detecting an unreachable node; deleting from the list, responsive to the detecting, each node with a discovery source matching the unreachable node (removes unreachable nodes, see ¶.58 and ICMP Echo request, see ¶.40)." Also, Dobbins discloses the limitation of "announcing, to each node in the list, the deletion of each deleted node (col.24, ln.22-24)". Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the deletion method of Quarterman and advertisement method of Dobbins into the dynamic routing method of Huang so as to improve routing function by acquiring dynamically updated node information in the routers and having alternative paths.

Regarding claim 14, Huang does not explicitly disclose, "receiving a deletion announcement, wherein the deletion announcement comprises at least one node to be deleted; and deleting from the list, responsive to the receiving, each node corresponding



to the node to be deleted". However, Quarterman discloses a ping message to remove unreachable nodes (§.58). Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to include the ping message as a deletion announcement as taught by Quarterman into the dynamic routing method of Huang so as to improve routing function by updating the routing table in routers.

Regarding claim 15, Huang does not explicitly disclose what Dobbins discloses, "forwarding, to each node in the list, the node to be deleted (col.24, ln.22-24)." Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the advertising method taught by Dobbins into the dynamic routing method of Huang so as to improve routing function by acquiring dynamically updated node information in the routers and having alternative paths.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jung Park whose telephone number is 571-272-8565. The examiner can normally be reached on Mon-Fri during 6:15-3:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 571-272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

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JP

Jung Park  
Patent Examiner



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